

**A PROJECT REPORT**  
**ON**  
**“AUTHENTICATION OF MARKSHEET USING QR**  
**CODE”**

**Submitted to**  
**UNIVERSITY OF MUMBAI**

**In Partial Fulfillment of the Requirement for the Award of**

**BACHELOR’S DEGREE IN**  
**COMPUTER ENGINEERING**

**BY**

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**UNDER THE GUIDANCE OF**  
**PROF. MUBASSHIR KHAN**



**DEPARTMENT OF COMPUTER ENGINEERING**  
**Anjuman-I-Islam's Kalsekar Technical Campus**  
**SCHOOL OF ENGINEERING & TECHNOLOGY**

**Plot No. 2 & 3, Sector - 16, Near Thana Naka,**  
**Khandagaon, New Panvel - 410206**

**2017-2018**

**AFFILIATED TO**  
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## CERTIFICATE

This is certify that the project entitled

### AUTHENTICATION OF MARKSHEET USING QR CODE

submitted by

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is a record of bonafide work carried out by them, in the partial fulfilment of the requirement for the award of Degree of Bachelor of Engineering (Computer Engineering) at *Anjuman-I-Islam's Kalsekar Technical Campus, Navi Mumbai* under the University of MUMBAI. This work is done during year 2017-2018, under our guidance.

Date:     /     /

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## Project II Approval for Bachelor of Engineering

This project entitled *Authentication Of Marksheet By Using QR Code* by *Abrar Nizamuddin Mungi Shehnaz, Sayyed Mehfooz Ali Mehmood Ali Shama Bano, Khan Mustafa Mohd Siddique Alimunnisa, Shaikh Mohd Saad Asadullah Mubaiyana* is approved for the degree of *Bachelor of Engineering in Department of Computer Engineering*.

Examiners

1. ....

2. ....

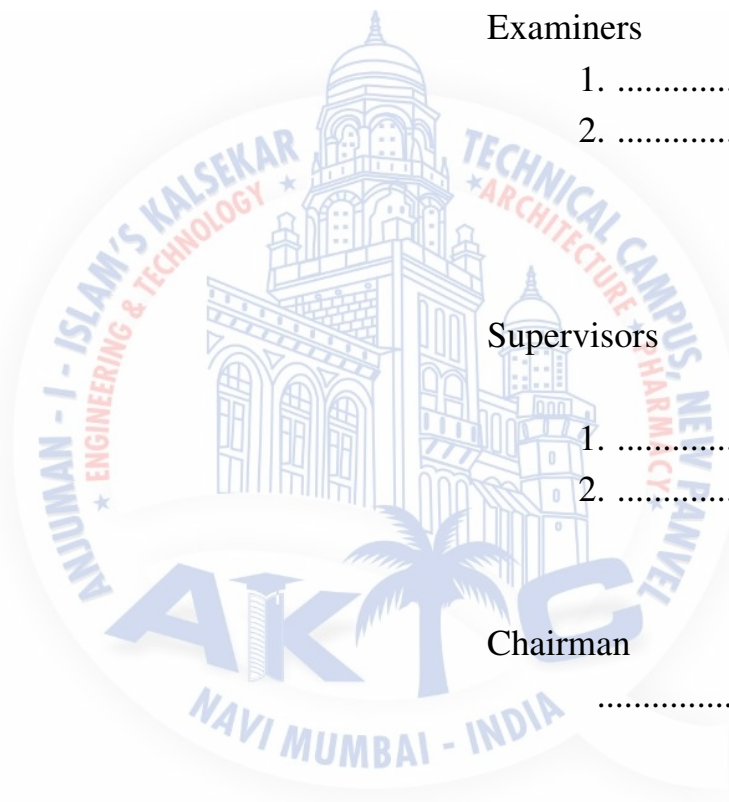
Supervisors

1. ....

2. ....

Chairman

.....



## Declaration

We declare that this written submission represents our ideas in our own words and where others ideas or words have been included, We have adequately cited and referenced the original sources. We also declare that We have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

The logo of AIKTC (Al-Jum'at - I - Islam's Kalsekar Technical Campus, Navi Mumbai - India) is a circular emblem. It features a central illustration of a large, classical-style building with multiple domes and minarets, set against a background of palm trees. The text 'AIKTC' is prominently displayed in the center in a large, stylized font. Surrounding the central image are the words 'ALJUMAN - I - ISLAM'S KALSEKAR' at the top, 'ENGINEERING & TECHNOLOGY' on the left, 'TECHNICAL CAMPUS, NAVI MUMBAI' on the right, and 'INDIA' at the bottom. The acronym 'AIKTC' is also written in a smaller font at the bottom of the circle.

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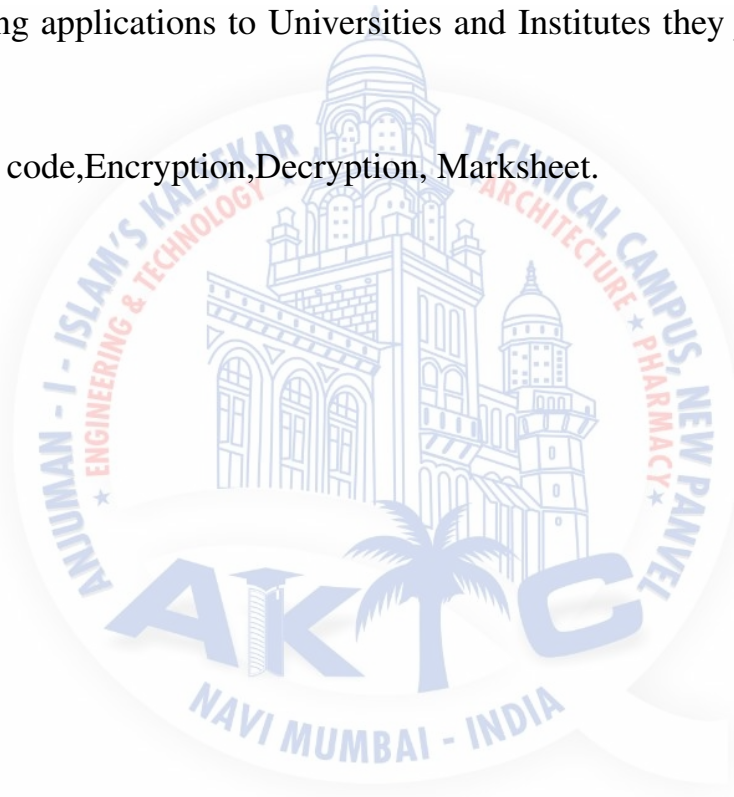
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## ABSTRACT

In today's digital world we have often hear the news about fake marksheet and unauthenticated certificate, and as we all know that marksheet is very sensitive document and no one wants to carry the hard copies of their marksheet as there is a chance of misplace of it, so it is a big challenge to provide security and authenticity of digital data. Our aim is to provide a digital marksheet which can't be modified from third party and also user can access their marksheet in any smart device. Digital marksheet is generated through the QR code and in that modification is not possible. And also if someone wants to verify whether the marksheet is genuine or fake then instead of writing applications to Universities and Institutes they just have to scan the QR code.

**Keywords:** QR code, Encryption, Decryption, Marksheet.



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# Chapter 1

## Introduction

QR code (abbreviated from Quick Response Code) is a type of matrix barcode. A QR code consists of black squares arranged in a square grid on a white background, which can be read by an imaging device such as a camera. In our system, digital marksheet is generated through the QR code and in that modification is not possible. And also if someone wants to verify whether the marksheet is genuine or fake then instead of writing applications to Universities and Institutes they just have to scan the QR code. We are using encryption and decryption technique for providing more security in our system.

### 1.1 Purpose

As we know that in this era we are moving towards digital world, so many of the people are using internet for storing the data on the cloud so that data can be accessed efficiently from any corner of the world. Also many of the people avoid carrying the hard copies of their documents wherever they are going, as taking care of these documents is a tedious task for them. And due to this, there may be a chance of getting lost of their documents which will be probably more difficult for them to get these lost documents back again, as they have to follow some procedures to get their lost documents back.

And nowadays we often hear about fake marksheets as many of the unauthorized users are creating the certificate with their own name and if someone wants to verify that certificate then long procedure she/he have to follow like first write an application to the University or the Institution in which certificate number is mentioned and then the University or Institution will search for that certificate by its certificate number and if they found then cross verification will be done and if they didn't found then that particular certificate is said to be fake as its details are not available with University or Institute in their databases. So now the question is how to get rid from all these things. For that reason we are proposing a syst.

## 1.2 Project Scope

As we see in today's digital world about fake marksheets in our daily life, this system will provide Authenticity by using QR code. which can't be modified by the end user as we are going to store this QR code that it provides a high level of Authenticity.

## 1.3 Project Goals and Objectives

### 1.3.1 Goals

The main goal of the system is to provide integrity, validity and strong security for student's marksheet. It should provide the authenticity of the students.

### 1.3.2 Objectives

Nowadays maintaining the marksheet is a very tedious task and no one wants to carry hardcopies of the marksheets and loss of it can cause lots of troubles, also it is very time consuming to recover it from university. We see in today's digital world about fake marksheets in our daily life, So Objective of this system is to provide Authenticity by using QR code which can't be modified by the end user as I am going to store this QR code in private storage of the Institute so that it provides a high level of security

## 1.4 Organization of Report

In Chapter 1: We have considered Project overview under which we have explained various important terminologies like Introduction of the project, motivation, problem definition, About current system, Advantages over current system, Goals and Objectives, Scope and Application.

In Chapter 2: We have discussed about various papers that we have referred for our project. We have mentioned the description, pros and cons and how to overcome the problem under every paper. a total of five papers have been referred.

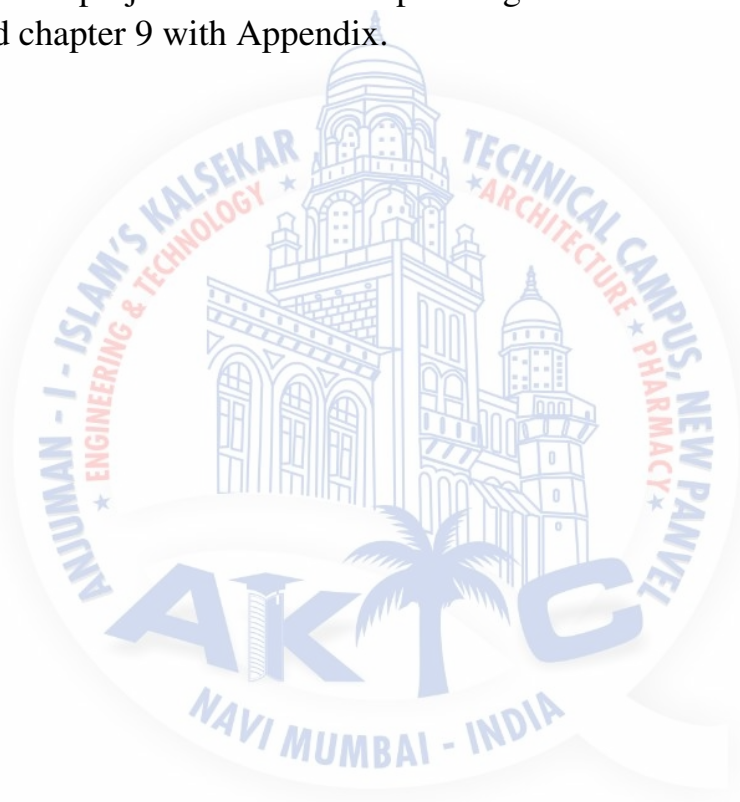
In Chapter 3: We have discussed about the requirement analysis under it we have considered about the requirement, the platform requirement supporting the OS of the software and hardware requirement along with the feasible study.

In Chapter 4: We can see the system design and architecture various diagrams can be seen in this chapter which represent the software, diagram including our system architecture use case diagram, dfd diagram, class diagram and component diagram.

In Chapter 5: We have seen the methodology here we have explain the project in detail by dividing into module.various module of Authentication Of Marksheet By Using QR Code are ex- plained with the help of few diagram.

In Chapter 6: We have discussed about the implementation details the assumption and dependencies this part contains details of the implementation of methodology that we discuss earlier.

In Chapter 7: We have shown the test cases and result along with analytic discus- sion this part contained the result of the output of the project. In Chapter 8: we have concluded the whole project and future scope along with the limitation followed up by reference and chapter 9 with Appendix.



## Chapter 2

### Literature Survey

#### 2.1 New Generation of Digital Academic-Transcripts using encrypted QR Code

In this paper, the author presents a method to digitize the mark-sheets, and embed the digital format in the mark-sheet itself in the form of encrypted QR Code. The Author uses TTJSA encryption technique and an amalgamation of three different cryptographic modules: generalized modified Vernam cipher, MSA and NJJSA, for the encryption purpose of data in the QR Code. After encrypting the data, data will be embedded in the QR Code using a set of different protocols and ultimately generate the encrypted QR Code.

##### 2.1.1 Advantages of Paper

- a. The Author used TTJSA encryption technique and is an amalgamation of three different cryp-tographic module.
- b. TTJSA for Encryption Purpose of the Embedded Data TTJSA is a combined symmetric key cryptographic method.
- c. High level of security is provided by authentication.

##### 2.1.2 Disadvantages of Paper

- a. Marksheet data is not encrypted before storing into the database.
- b. Implementation is very complex due to multiple encryption techniques used.
- c. consumes more time for execution i.e slow processing speed.

##### 2.1.3 How to overcome the problems mentioned in Paper

- a. In our project we are encrypting the data before storing into the database.
- b. We used AES algorithm for reducing complexity.



- c. Due to AES encryption algorithm processing speed is high.

## 2.2 QR Code Based Digitized Marksheet System

In this paper, a method is used to digitize the academic transcript i.e. mark-sheets, and embed the digital format in the mark-sheet itself in the form of encrypted QR Code, so that the digital data can not be retrieved by any unauthorized user. In this new marksheet system, the digital data, which is embedded in the marksheet in form of encrypted QR Code, can only be retrieved and decrypted using their own web-application, which is hosted over network.

### 2.2.1 Advantages of Paper

- a. Data cannot be accessed by unauthorized user because is marksheet embed in QR code itslef.
- b. Data of the student is in encryptrd form in the QR code.
- c. It embed the digital format in the mark-sheet itself in the form of encrypted QR Code.

### 2.2.2 Disadvantages of Paper

- a. It is not storing the data in an encrypted format into the database, it is just encrypting the data into QR code format
- b. Students has to use their own web-application to decrypt the data from QR code.
- c. Database is not secure in this system.

### 2.2.3 How to overcome the problems mentioned in Paper

- a. It is not storing the data in an encrypted format into the database, it is just encrypting the data into QR code format.
- b. Data should be secure before entering it in the database.
- c. Encryption algorithm used should provide high level of security, which is a fundamental loophole in the system.

## 2.3 Secure QR Coding of Images Using the Techniques of Encoding and Encryption.

A new technique for QR Coding of images is proposed in this paper. Security aspects are also discussed. Using the concepts of Encoding and Data Encryption,

this method of Image Encoding can be used for high security Image applications like Diagrams for Military purposes, Passport Photographs, Hall Ticket Photographs and a lot more. Encoding the data results in high capacity codes and thus enhances the ability to store more information. Results are compared with the existing QR Codes and the findings are reported.

### 2.3.1 Advantages of Paper

- a. Entire image is been encoded into the QR code in this system.
- b. Encoding the data results in high capacity codes and thus enhances the ability to store more information.
- c. Images stored in the QR code are encrypted.

### 2.3.2 Disadvantages of Paper

- a. It is difficult to implement because QR code provides very less amount of data for store.
- b. Encoding the data results in high capacity codes which require more space.
- c. Security is less due to not encrypting the data in database as well as in the QR code.

### 2.3.3 How to overcome the problems mentioned in Paper

- a. Only data should be entered in the database without template.
- b. Encrypt the data before entering it in database.
- c. A strong security providing algorithm should be used for encryption of data.

## 2.4 An Image Encryption Method: SD-Advanced Image Encryption Standard: SD-AIES

A standard method of image encryption is used in this paper. The proposed method consists of 4 different stages: 1) First, a number is generated from the password and each pixel of the image is converted to its equivalent eight binary number; 2) In second stage, extended hill cipher technique is applied by using involutory matrix; 3) In third stage, generalized modified Vernam Cipher with feedback mechanism is used on the file to create the next level of encryption; 4) Finally in fourth stage, the whole image file is randomized multiple number of times using modified MSA randomization encryption technique.

### 2.4.1 Advantages of Paper

- a. Modified MSA randomization encryption technique is used which provide higher security.
- b. Each pixel of image is converted to its equivalent eight binary number and encrypted.
- c. Generalized modified Vernam Cipher with feedback mechanism is used on the file to create the next level of encryption for better security.

### 2.4.2 Disadvantages of Paper

- a. It is just encrypting the image and making the image in unreadable form.
- b. It does not decrypt the image again.
- c. It provides just one way of encryption-decryption technique.

### 2.4.3 How to overcome the problems mentioned in Paper

- a. Decryption should be done by another algorithm.
- b. Content of image should be encrypted and decrypted only.
- c. Entire image should not be encrypted.

## 2.5 Private data sharing and document authentication using 2LQR.

Pathology laboratory is a place where patient's medical reports are prepared and these reports are confidential and private which can't be accessed without authorization. In some cases where crime is done and medical reports are the only proof, in those cases confidentiality is very important. Hence this system is providing that privacy and security using 2LQR code which is made up of public and private level. Report is stored in QR code and is only accessible by lab assistant and intended doctor so that doctor can scan the QR code printed on the patient's report and verify that decoded report which can't be edited. Also it can be sent over the network by preventing from malicious attacks.

### 2.5.1 Advantages of Paper

- a. PSR algorithm is used for high level of data encryption.
- b. It provides private encryption key.
- c. 2LQR provides two levels of additional storage capacity.

### **2.5.2 Disadvantages of Paper**

- a. It delays for users verification.
- b. Complex to design two level of QR.
- c. Data is not much secure due to weak encryption algorithm.

### **2.5.3 How to overcome the problems mentioned in Paper**

- a. Encryption algorithm must be strong.
- b. Data should be encrypted before storing in the QR code.
- c. In both the QR codes data should be stored separately.

## **2.6 Technical Review**

The technology that we are using in our project are as follow:

1.Android, 2.XAMP server, 3.AES encryption algorithm, 4.Scanner.

### **2.6.1 Advantages of Technology**

- a. We are using AES algorithm to provide high level of security.
- b. We are encrypting the data before storing it in database.
- c. We are also encrypting the data before storing it in QR code.

### **2.6.2 Reasons to use this Technology**

- a. Not complex, Easy to implement.
- b. Highly responsive.
- c. Provides high level of security.

## Chapter 3

# Project Planning

### 3.1 Members and Capabilities

**Table 3.1:** Table of Capabilities

SR. No	Name of Member	Capabilities
1	Abrar	Programming, validation, testing
2	Mustafa	Programming, Back-End processing
3	Mehfooz	Programming, Presentation
4	Saad	Programming, UI Designing

Work Breakdown Structure

### 3.2 Roles and Responsibilities

**Table 3.2:** Table of Responsibilities

SR. No	Name of Member	Role	Responsibilities
1	Mehfooz	Team Leader	Leading the team
2	Mustafa	group member2	Database
3	Abrar	group member3	Encryption and Decryption
4	Saad	group member4	UI Design

### 3.3 Assumptions and Constraints

#### 3.3.1 Assumptions

Assumptions are that the admin is reliable person and the data entered by admin is valid and correct.

#### 3.3.2 Constraints

There are various systems available of QR code generation by an image but they are not encrypting it before storing the data in the databases.

### 3.4 Project Management Approach

We have use Spiral methodology for the development of this project. The Spiral Project Management Process is a value-centered methods of project management that allows projects to get processed in small phases or cycles. The methodology is one that is extremely flexible and projects that exhibit dynamic traits would benet from this process as you would nd that project managers working in this environment treat milestones the goal being to continuously adapt to abrupt changes from our project guide feedback.

### 3.5 Ground Rules for the Project

1. We treat each other with respect.
2. We intend to develop personal relationships to enhance trust and open communication.
3. We value constructive feedback. We will avoid being defensive and give feedback in a constructive manner.
4. As team members, we will pitch in to help where necessary to help solve problems and catch-up on behind schedule work.
5. Additional meetings can be scheduled to discuss critical issues or tabled items upon discussion and agreement with the team leader.
6. One person talks at a time; there are no side discussions.
7. When we pose an issue or a problem, we will also try to present a solution.

### 3.6 Project Budget

The budget for this project is very low as most of the tools we have use are open source.Following are the budget for the project.

1. Operating System:linux mint (Open Source).
2. IDE:Andriod Studio (Open Source).
3. Server: xampp server(open source)

### 3.7 Project Timeline

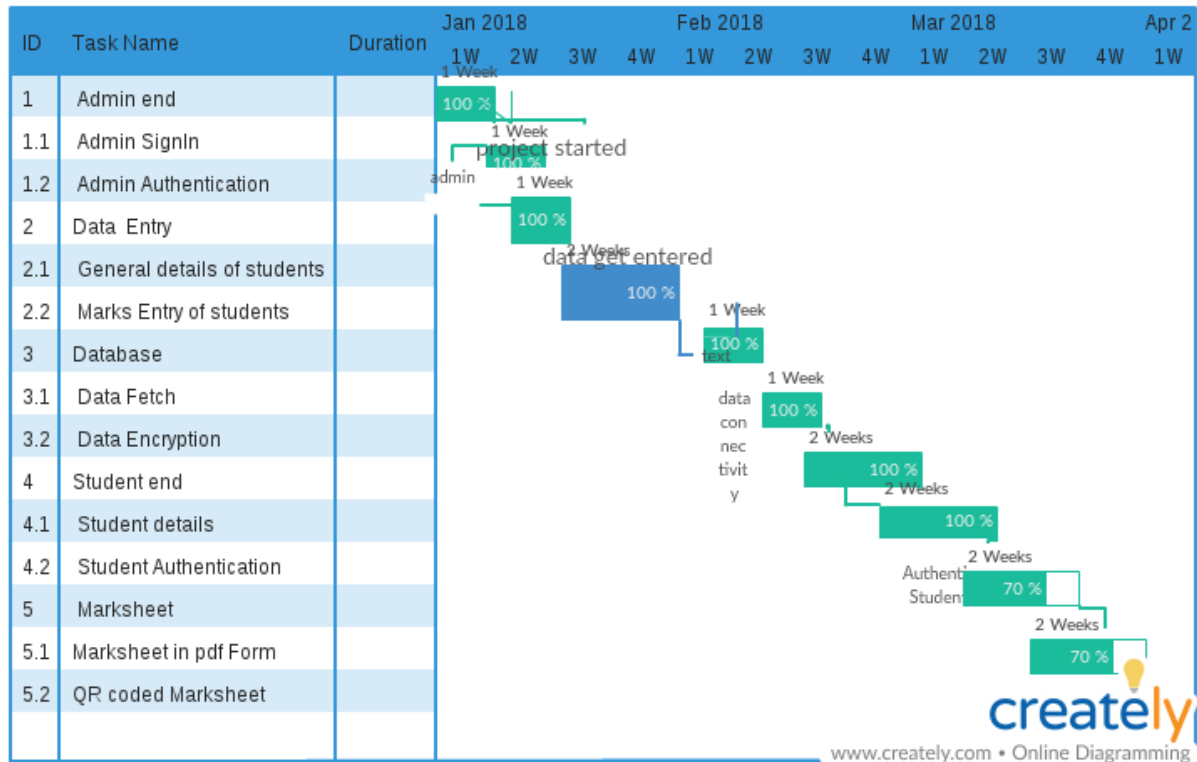


Figure 3.1: Gantt Chart

## Chapter 4

# Software Requirements Specification

### 4.1 Overall Description

#### 4.1.1 Product Perspective

Our system is totally based on the marksheet. It uses QR code for generating the marksheet so that marksheet can be authenticate in a better way.

#### 4.1.2 Product Features

The major feature of our product is to authenticate the marksheet whether it is genuine or fake and to provide an easy and handy way for accessing the marksheet without any difficulties to the users.

#### 4.1.3 User Classes and Characteristics

Different user will use the product differently and the user class related to the system will change according to the need of user but the pertinent characteristics of the classes will remain the same and user will primary interact with three main class of product that is QR code generation, QR code scanning and marksheet generation class, the rest are less important according to this three classes. User interaction with these classes will also enhance the user experience with the product.

#### 4.1.4 Operating Environment

The environment in which the software will operate is Android and the hardware platform on which the software will run will be any android based smart phone. The android Version should be Greater that 4.0 that is Android Jellybean and higher.

In terms of platform requirement, our system is independent of platform, as our system is web based application, so it requires any operating system along with web browser as for computer system.



### 4.1.5 Design and Implementation Constraints

The major challenge that will hurdle the generation of marksheet from the QR code is not working of Scanner app because scanner app plays an important role in generation of the marksheet. Another constraint would be the internet connectivity, if there is no internet connection available then user cannot access qr code from our website.

## 4.2 System Features

The major feature of our system is to provide an ease of access to the marksheet and also to provide a facility to authenticate the marksheet between the genuine one and the fake one.

### 4.2.1 System Feature

1. Encryption and Decryption of the data.
2. Generation of marksheet using QR code.

#### Description and Priority

1. Encryption and Decryption of the data:

The data which is used for generating the marksheet is stored in an encrypted form in the database. And while fetching these data for generation of the QR code, it get decrypted and get ready for the generation of QR code.

2. Generation of marksheet using QR code:

The QR code which is generated using encrypted data of marksheet is used for generation of the marksheet after scanning from the scanner app.

#### Stimulus/Response Sequences

1. The user will do login through its Roll No. and Date of Birth.
2. User will scan the QR code with help of scanner app.

#### Functional Requirements

1. The user should enter correct Roll No. and Date of Birth.
2. The user should use our developed scanner app for scanning the QR code.
3. The user should have to wait for scanning till scanning is done completely.

## 4.3 External Interface Requirements

### 4.3.1 User Interfaces

1. User shall be able to login into the system.
2. After the login, session shall be maintain.
3. After getting QR code the user shall scan it.

### 4.3.2 Hardware Interfaces

Android enabled device: The android enabled device should have android version above 4.0. In order for the smooth functioning of the application the android device must have at least 512MB of RAM and at least 200MB of free storage on device. The application can also function on a tablet device.

### 4.3.3 Software Interfaces

Operating System: Android above 4.0. Browser: Google Chrome, Firefox, Safari. Database: PHP. Tools: Android Studio IDE.

### 4.3.4 Communications Interfaces

The major communication will be done between the server and the client which is a user who visits our website for accessing the QR code of his/her marksheet.

## 4.4 Nonfunctional Requirements

### 4.4.1 Performance Requirements

1. Response Time: For the quick response of 0.2 seconds as it is its avg response time, internet bandwidth must be higher in MBs.
2. Workload: At a time multiple users can access our website for fetching the QR code and to avoid the website to get slow, hosting of the website should be with a good server specifications.

### 4.4.2 Safety Requirements

If in case any damage to the server occurred than the whole system will go down so there must be some alternative for it. The database should be periodically maintained and have to keep upon it. The data which is updated by the admin should be committed in the database.

### 4.4.3 Security Requirements

The major security requirements for the system will be the safeguarding of the user data from any kind of exploit. In order to protect the user data, the data is not stored in a plain text but in an encrypted form.



# Chapter 5

## System Design

### 5.1 System Requirements Definition

Our system is an android application as well as a website. Our system will function overall on the marksheet which is generated by the admin. We had survey various applications related to our project. We had decided the system specification for our project. We had studied the end-user requirements and based on that we have decided the functional and non-functional requirements.

#### 5.1.1 Functional requirements

1. The users must register for create the account and login using Roll No. and Date of Birth to use functions available on the website.
2. The results should be generated from the admin before any user access it.
3. The user should have scanner app for scanning the QR code.

## Use-case Diagram

In this UseCase diagram, there are two actors- Examcell Controller and Student. Examcell controller: Examcell Controller can enter the marksheet details and generate the marksheet and then QR code of that respective marksheet and store all these in database. Student: New student can do registration and then do login, give answer of the security question, then should enter OTP code and after successful verification, can enter Seat Number and Semester and then can get access to the QR code and then by scanning QR code, get download or view it.

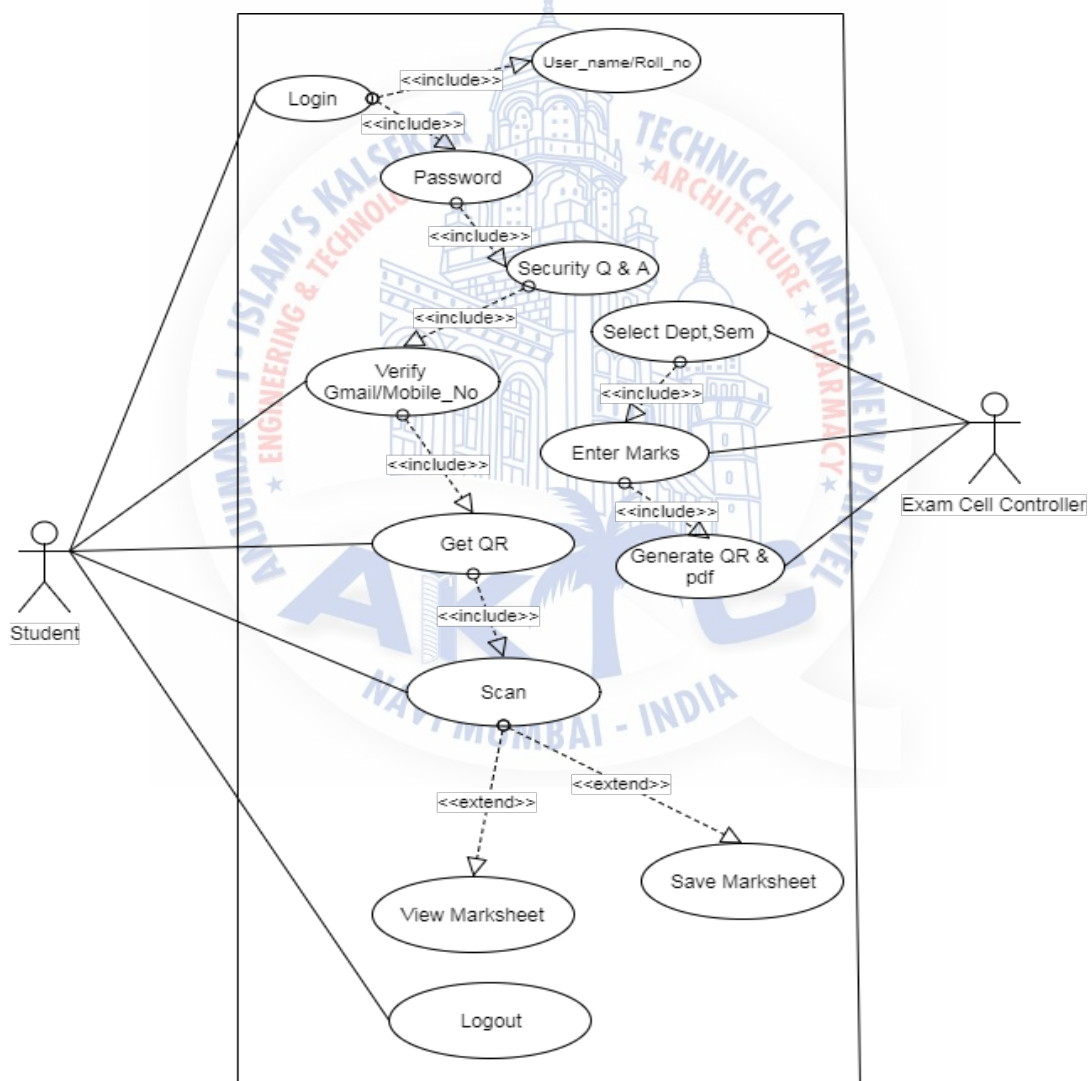
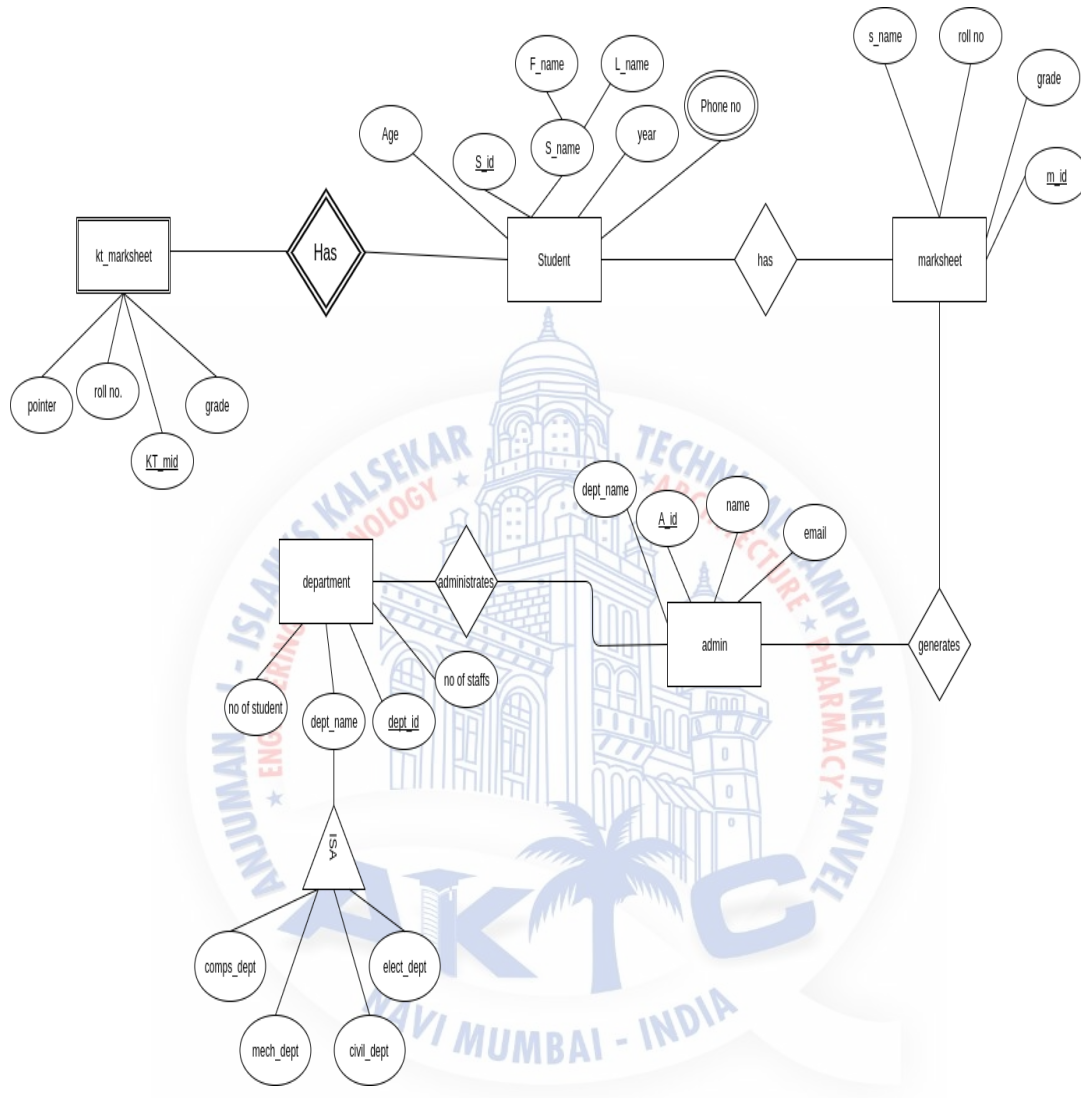


Figure 5.1: Usecase Diagram

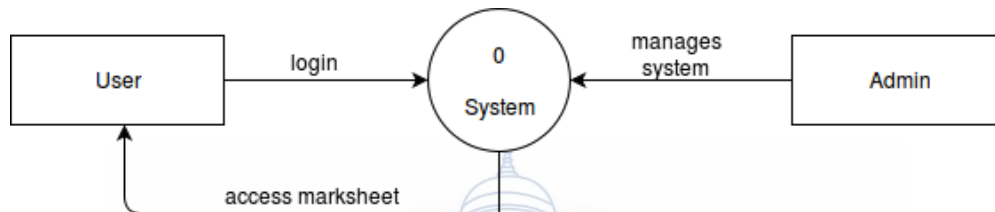
**EER Diagram**



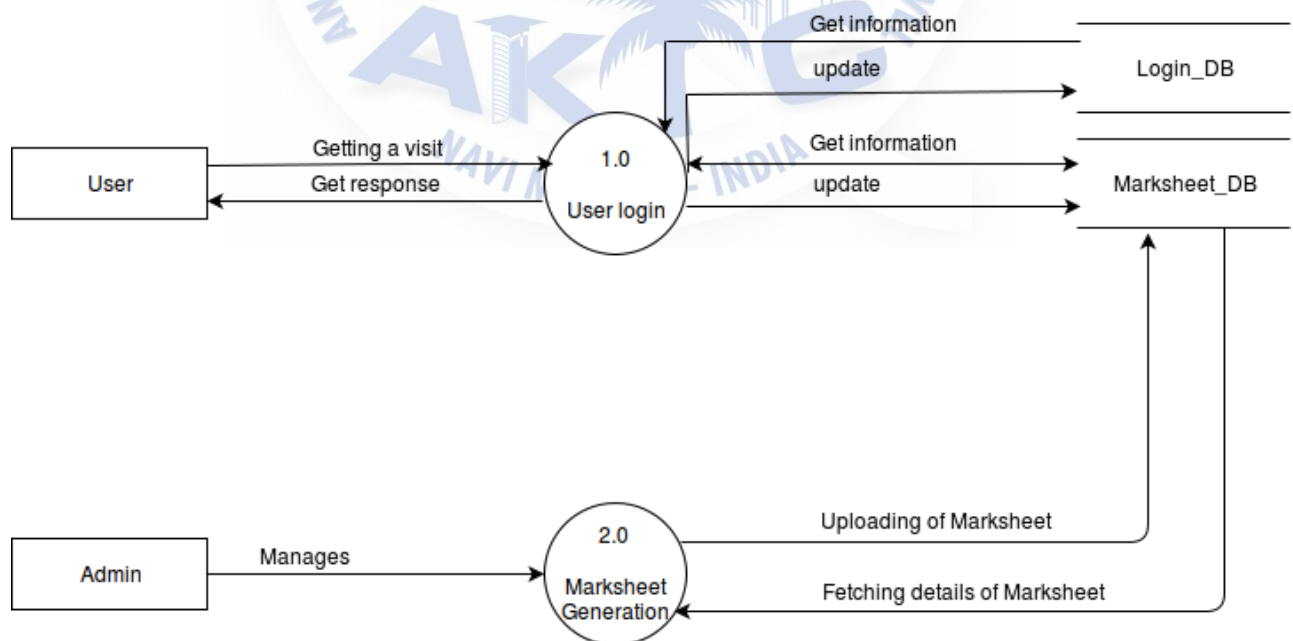
**Figure 5.2: EER Diagram**

**Data Flow Diagram****Level 0 DFD:**

This is the level-0 DFD which shows the User will do login to the system and after successful login process, user will get access to the marksheet and admin manages the system.

**Figure 5.3: DFD Level 0****Level 1 DFD:**

This is the Data flow diagram level 1 of the system in which the modules which will be there after the deployment are shown. Database is shown for easy understanding of the project.

**Figure 5.4: DFD Level 1**

**Level 2 DFD:**

This is Data flow diagram level 2 of the system which shows more subprocesses of the marksheet generation process.

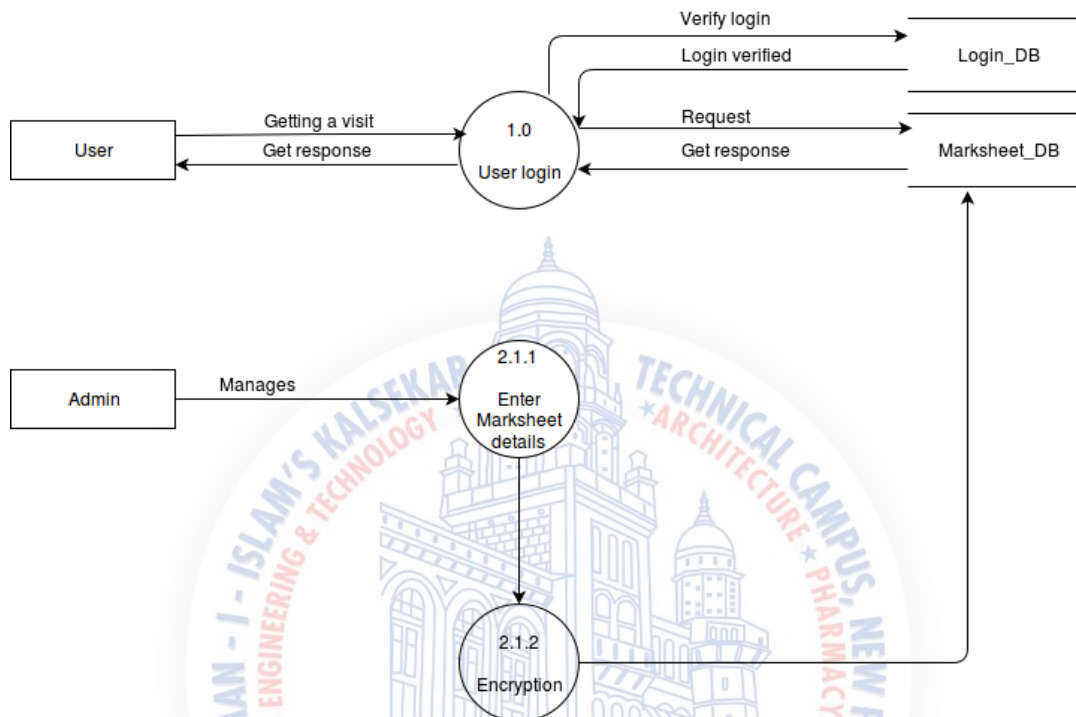


Figure 5.5: DFD Level 2

### 5.1.2 System requirements (non-functional requirements)

#### Performance Requirements

1. Response Time: For the quick response of 0.2 seconds as it is its avg response time, internet bandwidth must be higher in MBs.
2. Workload: At a time multiple users can access our website for fetching the QR code and to avoid the website to get slow, hosting of the website should be with a good server specifications.

#### Safety Requirements

If in case any damage to the server occurred than the whole system will go down so there must be some alternative for it. The database should be periodically main-



tained and have to keep upon it. The data which is updated by the admin should be committed in the database.

### Security Requirements

The major security requirements for the system will be the safeguarding of the user data from any kind of exploit. In order to protect the user data, the data is not stored in a plain text but in an encrypted form.

## 5.2 System Architecture Design

System Architecture consists of following modules:

- Registration of User (Student): New student can do registration using this Registration component.
- Email / Mobile number verification: This will be used for verifying the user by OTP verification on their Email / Mobile number.
- Digital Marksheet Generator: This component is used for generation of the Marksheet's PDF.
- Data Extractor: This component is used to extract the QR code and as well as URL of the Marksheet's PDF.
- Data Compressor: This component is used to compress the information of the marksheet of each particular student. So that it can be easily stored into the database.
- QR code Generator: This component is used for generating the QR code of the Marksheet's information.
- Data Organizer: This component is used for organizing the Marksheets of all the students.
- URL Locator: It is used to locate the URL of the Marksheets PDF.
- Cloud Server: It is an institute's cloud server where all the marksheets and their QR codes will be stored.

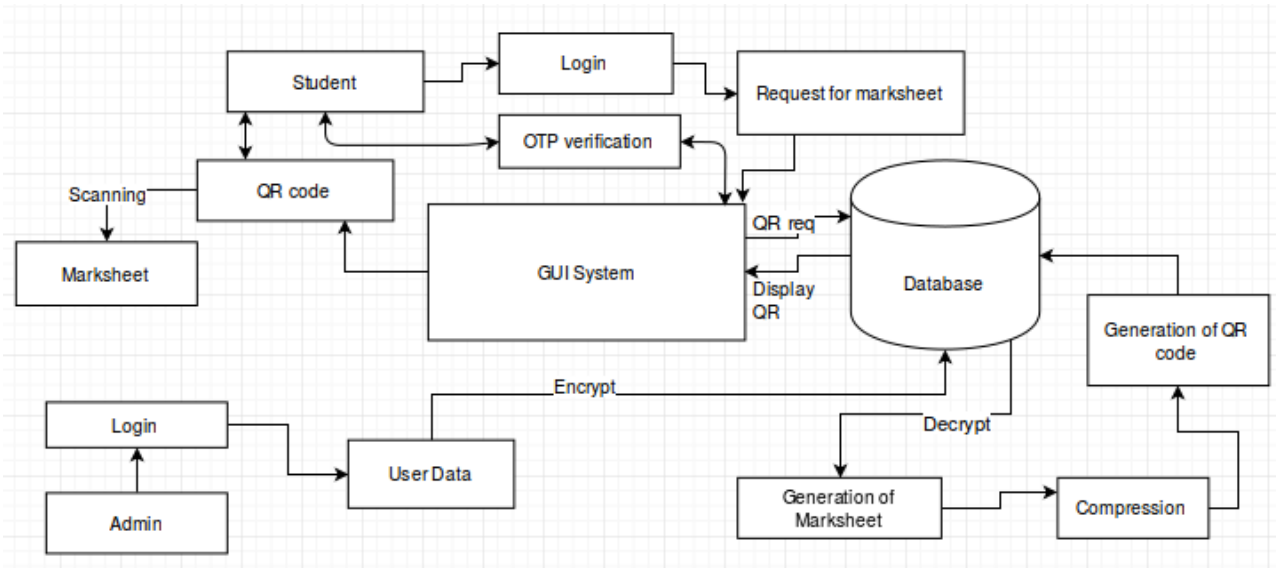


Figure 5.6: System Architecture

### 5.3 Sub-system Development

**Admin End:** In this module the authentication part is covered and it provides a safe login into system via credentials provided by developer of the system to the admin and admin here can generate the marksheet.

**Student End:** Student can do his/her login over here in this module and can fetch the QR code of his/her marksheet and also can scan the QR code.

**Database Module:** All the data which is very important for the generation of the marksheet such as marks are get encrypted first and then stored into the database.

#### 5.3.1 Admin End

Every admin has their unique ID and password which will help them to store students data. our assumption is that the Admin is reliable and they will enter correct data into the database.

### Admin end diagram

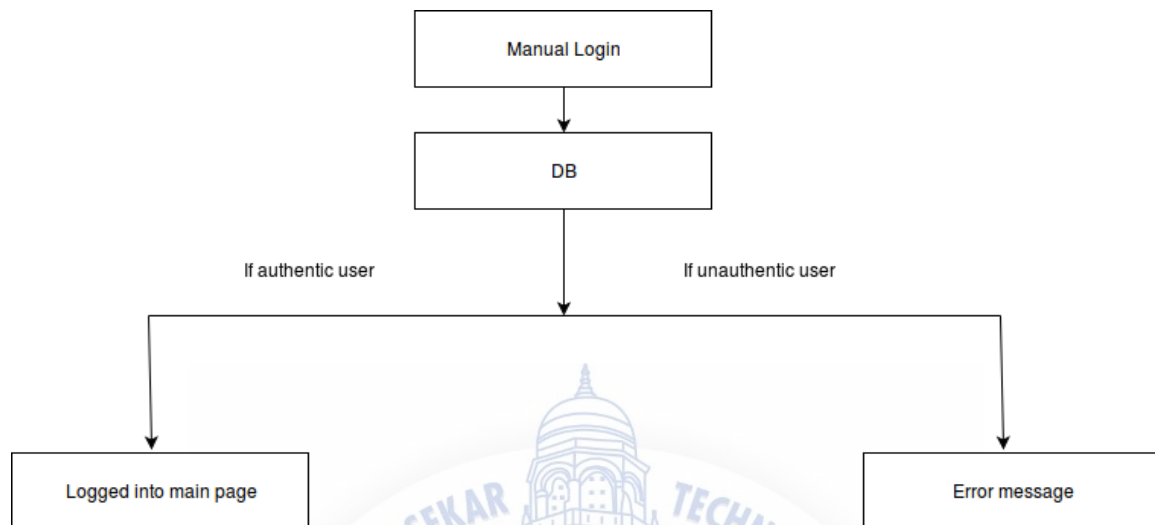


Figure 5.7: Admin Login

### 5.3.2 Student login

The student will get their result once they successfully gone through credential, they have to enter their roll no and date of birth.

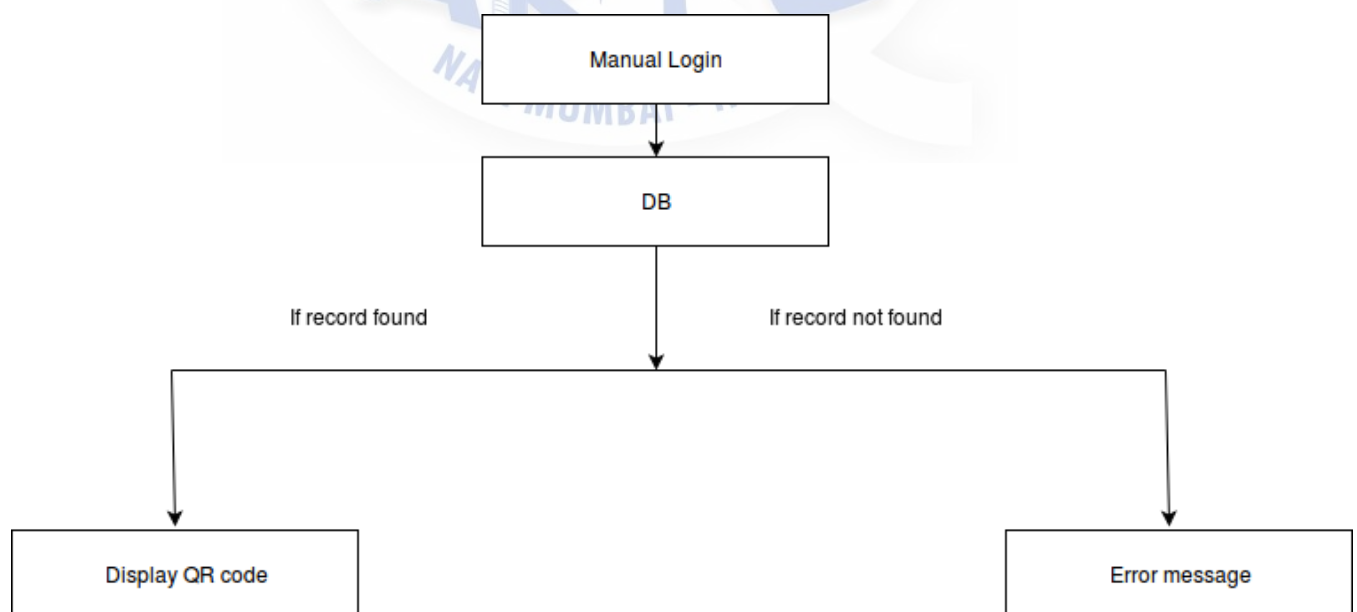


Figure 5.8: Student Login

### 5.3.3 Database Module

Once the admin enter the student details and their marks the data is stored into the database. we are storing the data in encryption format the reason behind it if somehow unauthorized person get access into the database the won't know what the actual data is.

#### Database

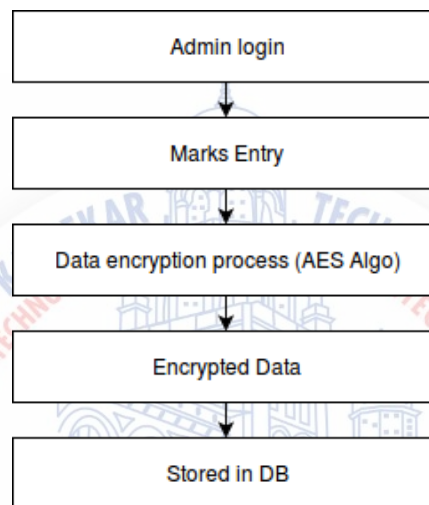


Figure 5.9: Database Phase

### 5.4 Systems Integration

The first module says about the admin end, The second module give information about student end which is using php for validation, the third module describe brief introduction about databases which is encrypted format the whole module give a validate marksheet in which anyone can trust, and it is easy to access and easy to carry also.

### 5.4.1 Sequence Diagram

This sequence diagram shows an interaction between Admin which is an Exam Cell Controller and Database via System and also vice-versa. Also it shows the User interaction to the database through the system and vice-versa. This diagram shows the overall activities of the Exam Cell Controller and the User (Student) in a sequential manner.

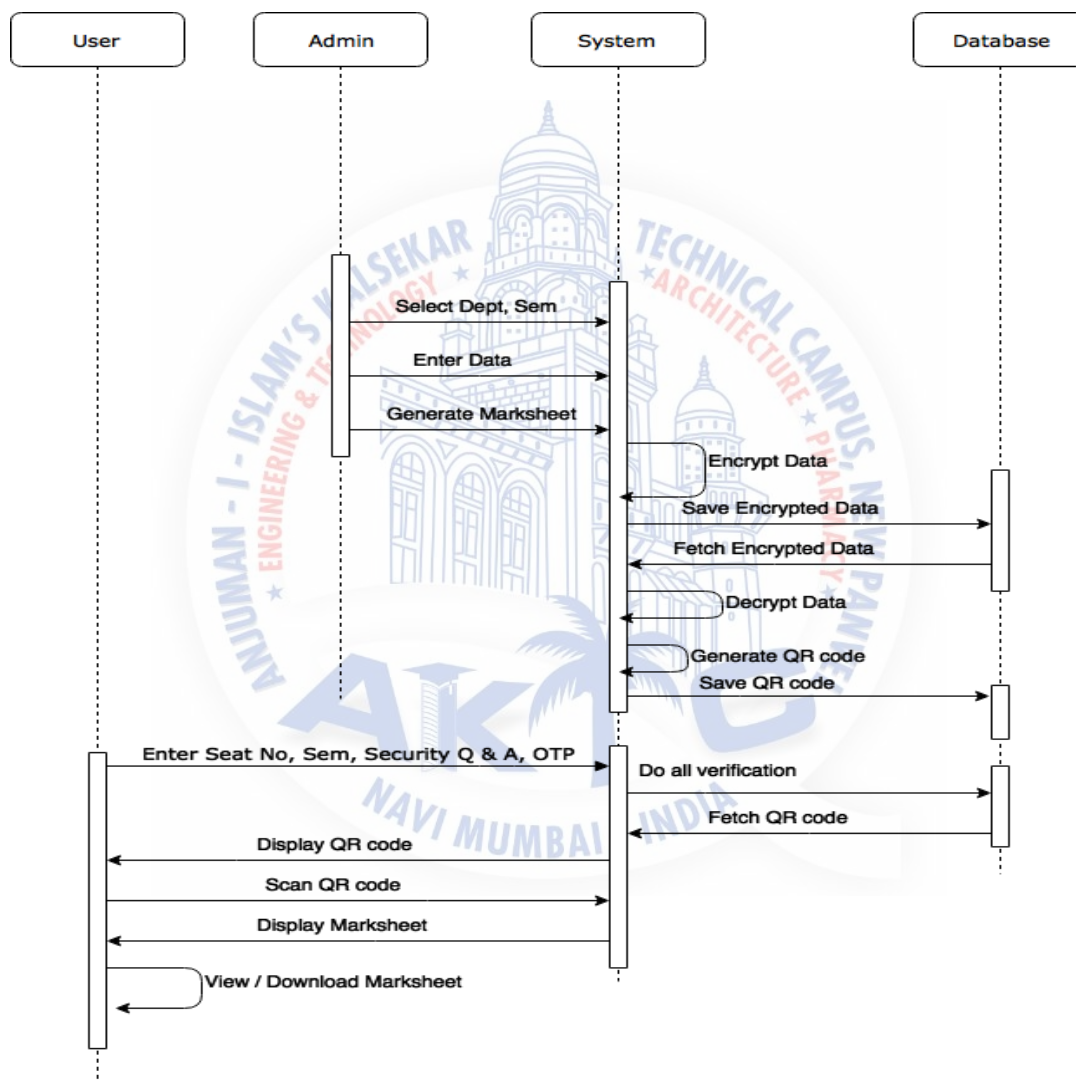


Figure 5.10: Sequence Diagram

## 5.4.2 Component Diagram

There are four main blocks in Component Diagram - Student block, Examcell Controller block, QR code generation block and database block. Student block: In student block there is a component login in which we are having certain interfaces like verification of credentials, security Question Answer, OTP verification and lastly QR code access interface. This block is having its connectivity with the database block. Examcell Controller block: This block is having the component of generation of marksheet and in that it comprises of two interfaces like marksheet's PDF generator and encryption. This block is having its control over the QR code generation block and also the connectivity with the Database block. QR code generation block: This block is having the QR code generation component which comprises of one interface - decryption interface. It is having its connectivity with the Database block. Database block: This block is in between the Student block and the Examcell Controller block. Its consists of database component for storing all the information in it.

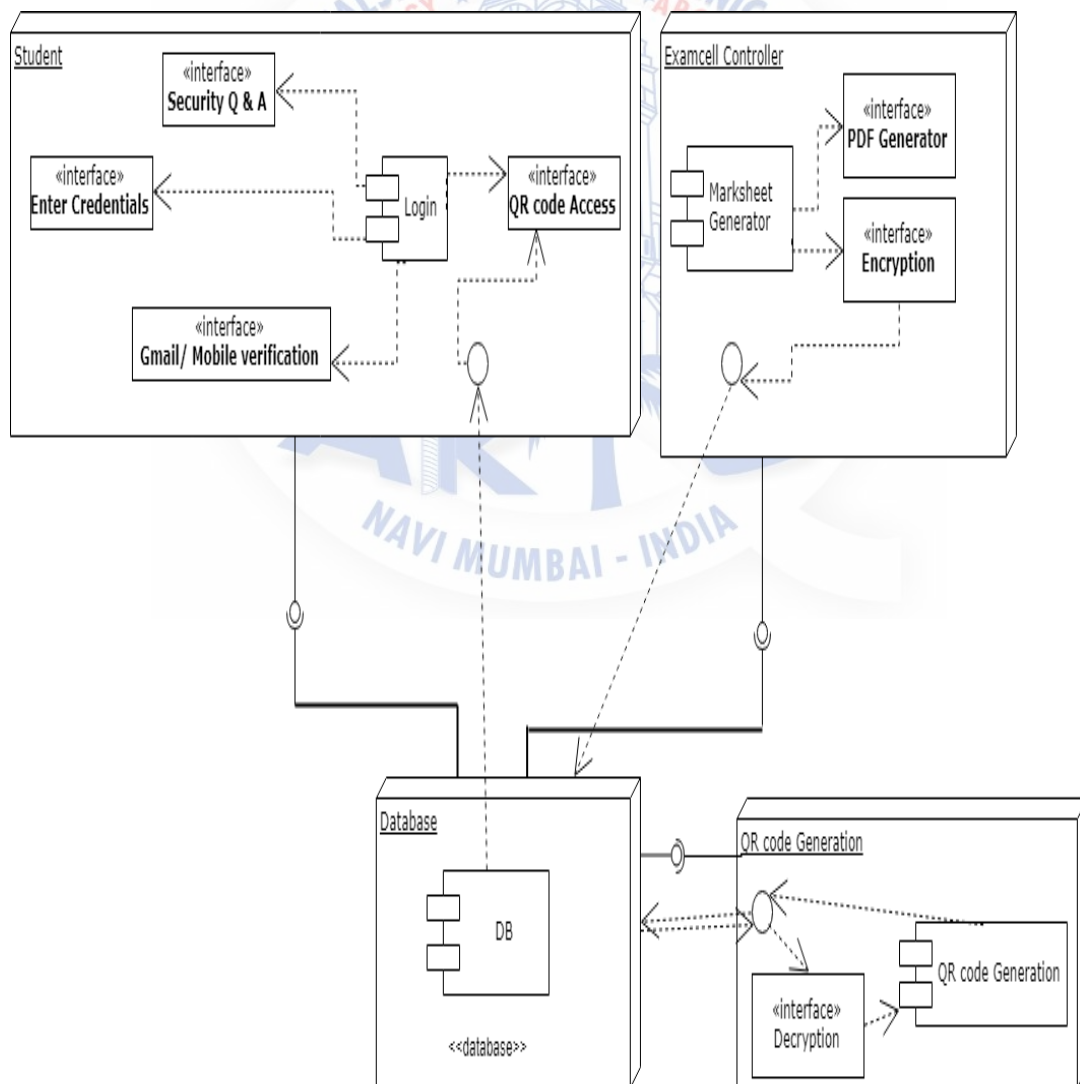


Figure 5.11: Component Diagram

### 5.4.3 Deployment Diagram

Deployment diagram is a structure diagram which shows architecture of our system as deployment (distribution) of software artifacts to deployment targets that is to the institute. In this diagram, institute's cloud server is there which will be get connected to the web server so that end-user can interact with our website through there.

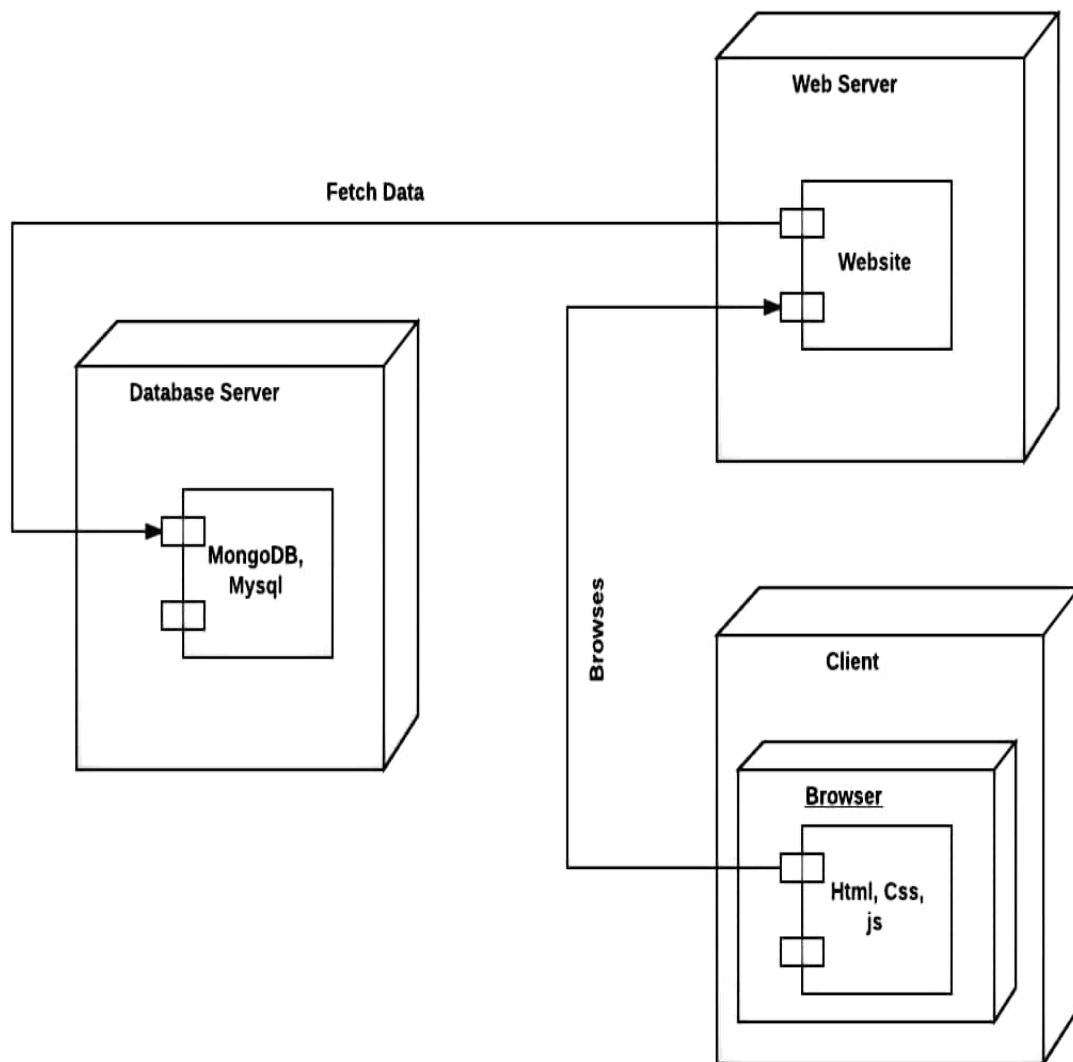


Figure 5.12: Deployment Diagram

# Chapter 6

## Implementation

### 6.1 Admin End

Basically in our system there are two ends: admin and student (user) end. Every admin will have their unique ID and password which will be helpful for them to enter the details of the students.

Here, the admin must be a reliable person because the authenticity of the marksheet will depend on them only.

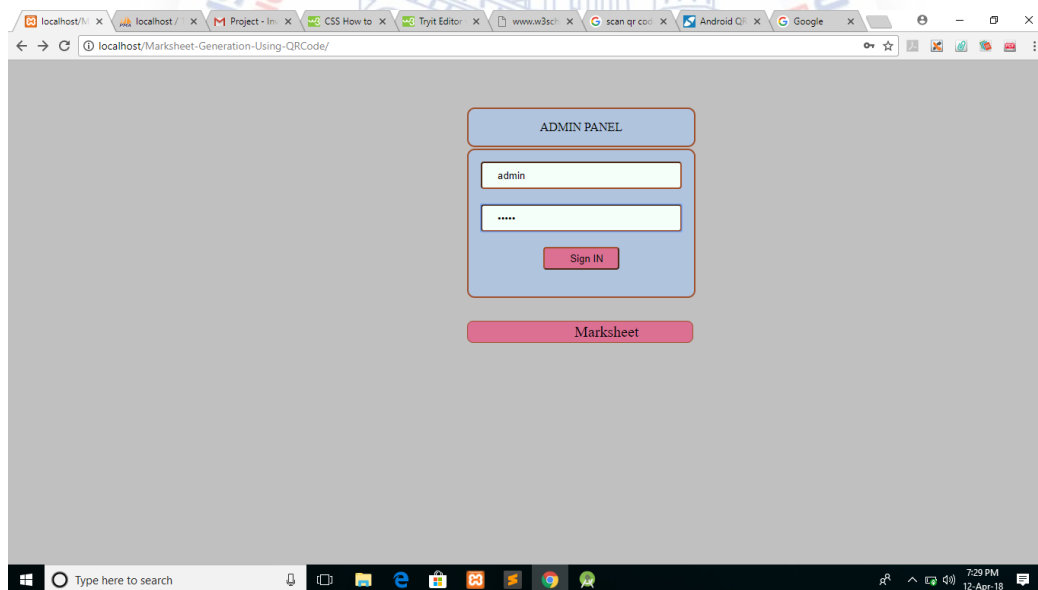


Figure 6.1: Admin Panel

```
1
2 layout code:
3
4 <?php session_start(); ?>
5
6 <!DOCTYPE html>
7 <html lang="">
8 <head>
9
10     <meta charset="utf-8">
```



```
11     <title ></title >
12     <link rel="stylesheet" type="text/css" href="login.css">
13     <script src="jquery/jquery.min.js">
14 </script >
15 <script >
16 $(document).ready(function(){
17     $("#flip").click(function(){
18         $("#panel").slideToggle("slow");
19     });
20 });
21 </script >
22
23
24
25 </head>
26 <body>
27
28
29     <div class="login_form" id="login_form" >
30     <div id="flip">ADMIN PANEL</div>
31
32         <div id="panel">
33
34             <form id="login" method="post" action="login_process.php">
35
36                 <input type="text" name="user_name" placeholder="UserName or E-mail">
37
38                 <input type="password" name="user_password" placeholder="your
39                     Password">
40                 <input type="submit" value="Sign IN" name="sign_in">
41
42             </form>
43
44         </div>
45     </div>
46     <div class="marks_check">
47         <a href="to_marksheet.php">Marksheet </a>
48
49     </div>
50
51
52
53 </body>
54 </html>
55
56
57
58 Validation code:
59
60
61
62 <?php
63
64 if(isset($_POST['sign_in']))
65 {
66     session_start();
67     $user=$_POST['user_name'];
68     $pwd=$_POST['user_password'];
69     $username="";
70
```

```
71 $con = mysqli_connect("localhost","root","","student_mis");
72 if (!$con)
73 {
74     die('Could not connect: ' . mysql_error());
75 }
76
77
78 $result = mysqli_query($con,"SELECT * FROM admin where username='{ $user}'");
79
80
81 while($row = mysqli_fetch_array($result))
82 {
83     $_SESSION['username']=$row['username'];
84     $username= $row['username'];
85     $password = $row['password'];
86 }
87
88 mysqli_close($con);
89 if((strcmp($user,$username)===0)&&(strcmp($pwd,$password)===0))
90 {
91     header('Location:marksheet.php');
92 }
93 else
94 {
95
96     echo"<p> please use your valid user Id and password </p>";
97 }
98 }
99
100 }
101
102 else
103 {
104
105 echo "error";
106 }
107
108 ?>
```

## 6.2 Data Entry

In this module the marks will be entered from the admin end. after completion of their data entry operation their percentage and grade will automatically generated.

Figure 6.2: Marks Entry

```

1  Layout code:
2  <?php session_start();
3  if (!empty($_SESSION['username']))
4  {
5  ?>
6
7
8  <!DOCTYPE html>
9  <html lang="en">
10 <head>
11     <meta charset="utf-8">
12     <title ></title >
13     <link rel="stylesheet" type="text/css" href="style.css">
14 </head>
15
16 <body>
17     <div class="student-form" >
18         <a href="logOut.php">Log Out</a>
19         <h2>Please fill up the form to get the marksheet.</h2>
20         <form method="post" action="marks_input_process.php">
21             <p>
22                 <label for="your_name">Name</label>
23                 <input type="text" name="your_name" placeholder="Eg. Mustafa Khan"
24                     id="your_name" >
25             </p>
26
27             <p>
28                 <label for="your class">Class </label>
29                 <input type="text" id="your class" placeholder="Eg. BECO" name="
30                     your_class" >

```

```
31     <p>
32     <label for="your_rollno">Roll NO</label>
33     <input type="text" name="your_rollno" placeholder="Eg. 14CO36" id
        ="your_name" >
34 </p>
35 <p>
36     <label for="your_dob">DOB</label>
37     <input type="date" name="your_dob" placeholder="Eg. 20-06-1996"
        id ="your_dob" >
38 </p>
39
40
41 <h3>Subjects </h3>
42
43
44 <p>
45     <label for="AI marks">Artificial Intelligence </label>
46     <input type="text" name="AI_mark" id="AI marks" placeholder="Eg.
        80">
47 </p>
48
49
50 <p>
51     <label for="Wireless marks">Structured Programming </label>
52     <input type="text" id="Wireless marks" placeholder="Eg. 78" name
        ="wireless_mark">
53 </p>
54
55
56 <p>
57     <label for="system design marks">Digital Signal And Processing </
        label>
58     <input type="text" id="system design marks" placeholder="Eg. 89"
        name="design_mark" >
59 </p>
60
61
62 <p>
63     <label for="cryptography marks">Cryptography </label>
64     <input type="text" id="cryptography marks" placeholder="Eg. 89"
        name="cryptography_mark">
65 </p>
66
67
68 <p>
69     <label for="computer marks">Computer Network </label>
70     <input type="text" id="computer marks" placeholder="Eg. 89" name
        ="cnetwork_mark">
71 </p>
72
73 <p>
74     <label for="simulation marks">Machine Learnig </label>
75     <input type="text" id="simulation marks" placeholder="Eg. 89"
        name="simulation_mark">
76 </p>
77
78 <p>
79     <input type="submit" value="Get Result" name="get_result">
80     <input type="reset" value="Reset form">
81
82 </p>
```

```
83
84     </form>
85
86 </div>
87 </body>
88 </html>
89
90 <?php
91 }
92 }
93 else
94 {
95     header("Location : index . php");
96     exit ();
97 }
98 ?>
99
100 Data Entry code :
```



## 6.3 Database Module

In this module we are dealing with the database. the data is storing into the database in Encrypted format. for Encryption we are using AES algorithm.

The advantage of storing Encrypted information is that suppose if any unauthorized user will get access to databases and they want to manipulate, as the data is encrypted they won't understand what the actual data is and how many marks i am getting.

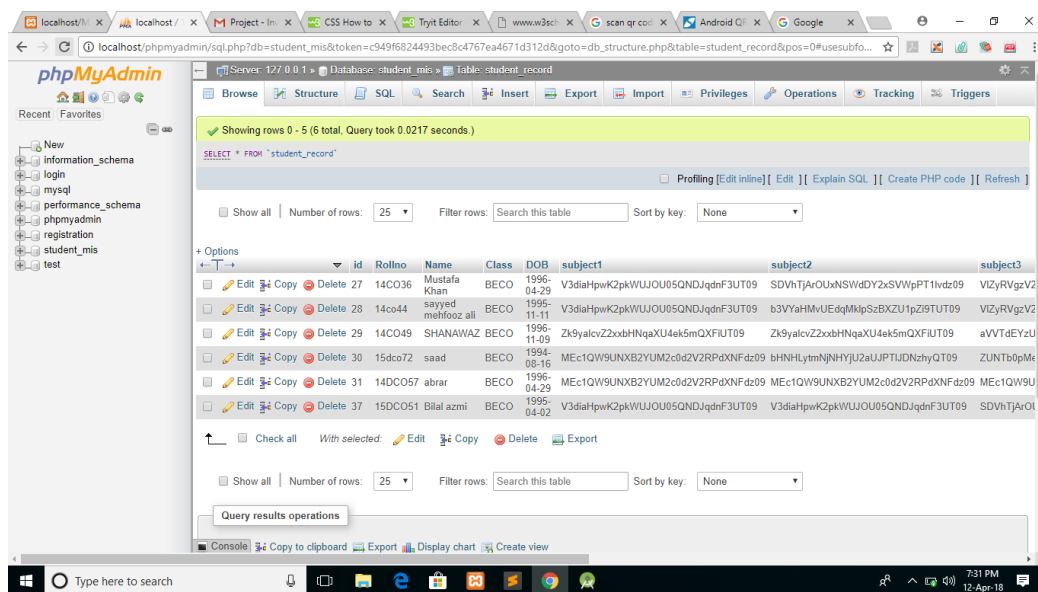


Figure 6.3: Encrypted Data

```

1  <?php
2
3  include_once("encrypt_decrypt.php");
4
5  $name=$_POST['your_name'];
6  $rollno=$_POST['your_rollno'];
7  $dob=$_POST['your_dob'];
8  $class=$_POST['your_class'];
9  $AI=my_simple_crypt($_POST['AI_mark'],'e');
10 $wireless=my_simple_crypt($_POST['wireless_mark'],'e');
11 $design=my_simple_crypt($_POST['design_mark'],'e');
12 $cryptography=my_simple_crypt($_POST['cryptography_mark'],'e');
13 $cnetwork=my_simple_crypt($_POST['cnetwork_mark'],'e');
14 $simulation=my_simple_crypt($_POST['simulation_mark'],'e');
15
16
17
18 require_once("conn.php");
19
20
21 $sql="INSERT INTO student_record (Rollno , Name , Class ,DOB,subject1 , subject2 ,
22   subject3 , subject4 , subject5 , subject6 )
  VALUES ( '$rollno' , '$name' , '$class' , '$dob' , '$AI' , '$wireless' , '$design' , '$cnetwork'
    , '$cryptography' , '$simulation' )";

```

```
23 if (!mysqli_query($con, $sql))
24 {
25     die('Error: ' . mysqli_error());
26 }
27 echo "1 record added <br>";
28 echo '<a href="marksheet.php">'. "Input the next student details". '</a>';
29
30 mysqli_close($con);
31 ?>
```



## 6.4 Student End

As we have earlier said our main user is student.in this module we are making marksheet accessible to them.for doing that we are using some short of credential.

Every student have their unique id and the password will be their date of birth once they enter the right value their QR code will be generated and after scanning it they can get their marksheet.

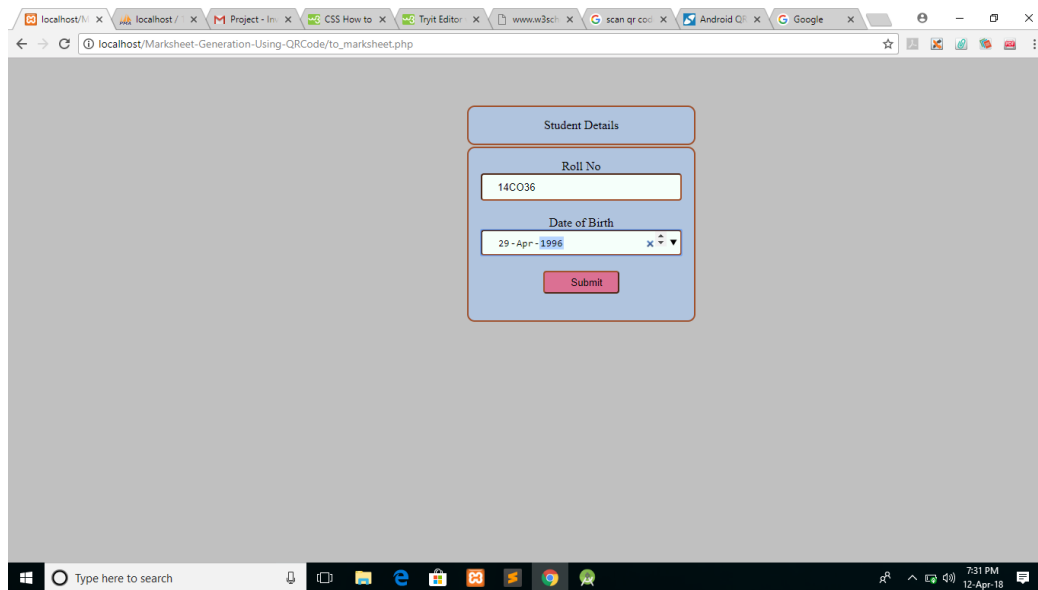


Figure 6.4: Student End

```

1  Layout Code:
2  <!DOCTYPE html>
3  <html lang="">
4  <head>
5      <meta charset="utf-8">
6      <title ></title >
7      <link rel="stylesheet" type="text/css" href="login.css">
8      <script src="jquery/jquery.min.js">
9  </script>
10 <script>
11 $(document).ready(function() {
12     $("#flip").click(function() {
13         $("#panel").slideToggle("slow");
14     });
15 });
16 </script>
17
18
19
20 </head>
21 <body>
22
23
24     <div class="login_form" >
25     <div id="flip">Student Details </div>
26

```



```
27     <div id="panel">
28
29     <form id="login" method="post" action="marksheet_request.php">
30         <legend for="user_rollno">Roll No</legend>
31         <input type="text" name="user_rollno" placeholder="Eg: 14CO46">
32         <legend for="user_dob">Date of Birth</legend>
33         <input type="date" name="user_dob" >
34         <input type="submit" value="Submit" name="show_result">
35
36
37     </form>
38
39 </div>
40 </div>
41
42
43
44 </body>
45 </html>
```



## 6.5 QR Code

The marksheet will be generated in the form of PDF



Figure 6.5: QR Code

```

1  <<?php
2  include_once("encrypt_decrypt.php");
3  $roll=$row[ 'Rollno' ];
4  $name=$row[ 'Name' ];
5  $class=$row[ 'Class' ];
6  $dob=$row[ 'DOB' ];
7  $AI=my_simple_crypt($row[ 'subject1' ], 'd');
8  $wireless=my_simple_crypt($row[ 'subject2' ], 'd');
9  $design=my_simple_crypt($row[ 'subject3' ], 'd');
10 $cryptography=my_simple_crypt($row[ 'subject4' ], 'd');
11 $network=my_simple_crypt($row[ 'subject5' ], 'd');
12 $simulation=my_simple_crypt($row[ 'subject6' ], 'd');
13
14 $AI_enc=$row[ 'subject1' ];
15 $wireless_enc=$row[ 'subject2' ];
16 $design_enc=$row[ 'subject3' ];
17 $cryptography_enc=$row[ 'subject4' ];
18 $network_enc=$row[ 'subject5' ];
19 $simulation_enc=$row[ 'subject6' ];
20
21
22
23 $total=$AI+$wireless+$design+$cryptography+$network+$simulation;
24
25     if ($AI>=32&&$wireless >=32&&$design >=32&&$cryptography >=32&&$network
26         >=32&&$simulation >=32)
27     {
28         $percentage=( $total/480)*100;
29         if ( $percentage >=80)
30         {
31             $result="Distinction";

```

```
32         elseif ($percentage >=70)
33             {
34                 $result="First Class";
35             }
36
37         elseif ($percentage >=60)
38             {
39                 $result="Second Class";
40             }
41         else
42             {
43                 $result="Third Class";
44             }
45
46     }
47
48     else
49     {
50         $result="UnSuccessful";
51         $percentage=( $total/480)*100;
52
53     }
54
55
56 header ("Content-Type: image/png");
57 require "vendor/autoload.php";
58
59 use Endroid\QrCode\QrCode;
60 $msg=$roll.' '.$name.' '.$class.' '.$dob.' '.$AI_enc.' '.$wireless_enc.' '.
61     $design_enc.' '.$cryptograpy_enc.' '.$network_enc.' '.$simulation_enc.' ';
62 $qrcode = new QrCode($msg);
63
64 echo $qrcode->writeString ();
65 ?>
66 <html>
67 <head>
68     <title >QR Code</title >
69     <link rel="stylesheet" type="text/css" href="login.css">
70 </head>
71 <body>
72
73     <form id ="login" method="post" action="qr_marksheet.php">
74
75 <input type="submit" value="Scan" name="show_result">
76
77     </form>
78 </body>
79 </html>
80 // include("mdesign.php");
```

## 6.6 Generated Marksheet

The marksheet will be generated in the form of PDF

University of Mumbai Kaisekar Technical Campus New Panvel Mark Sheet			
Name: Mustafa Khan		Class: BECO	
Name of Subjects	Total Marks	Passing Marks	Marks Obtained
Artificial Intelligence	80	32	75
Structured Programming	80	32	78
Digital Signal And Processing	80	32	65
Cryptography	80	32	57
Computer Network	80	32	79
Machine Learning	80	32	72
<b>Total Marks</b>	426		
<b>Percentage</b>	88.75		
<b>Result</b>	Distinction		

Figure 6.6: Final Marksheet

```

1  <?php
2  include_once("encrypt_decrypt.php");
3  $roll=$row['Rollno'];
4  $name=$row['Name'];
5  $class=$row['Class'];
6  $dob=$row['DOB'];
7  $AI=my_simple_crypt($row['subject1'],'d');
8  $wireless=my_simple_crypt($row['subject2'],'d');
9  $design=my_simple_crypt($row['subject3'],'d');
10 $cryptography=my_simple_crypt($row['subject4'],'d');
11 $network=my_simple_crypt($row['subject5'],'d');
12 $simulation=my_simple_crypt($row['subject6'],'d');
13
14
15
16 $total=$AI+$wireless+$design+$cryptography+$network+$simulation;
17
18     if ($AI>=32&&$wireless >=32&&$design >=32&&$cryptography >=32&&$network
19         >=32&&$simulation >=32)
20     {
21         $percentage=($total/480)*100;
22         if ($percentage >=80)
23         {
24             $result="Distinction";
25         } elseif ($percentage >=70)
26         {
27             $result="First Class";
28         }
29
30     { elseif ($percentage >=60)
31     {

```

```
32         $result="Second Class";
33     }
34     else
35     {
36         $result="Third Class";
37     }
38
39 }
40
41 else
42 {
43     $result="UnSuccessful";
44     $percentage=( $total/480)*100;
45
46 }
47
48
49
50 /* header("Content-Type: image/png");
51 require "vendor/autoload.php";
52
53 use Endroid\QrCode\QrCode;
54 $msg=$roll.' '.$name.' '.$class.' '.$dob.' '.$AI.' '.$wireless.' '.$design.' '.
55     $cryptology.' '.$network.' '.$simulation.' ';
56 $qrcode = new QrCode($msg);
```



## Chapter 7

### System Testing

Enter the marks and as a result marksheet should be generated

#### 7.1 Test Cases and Test Results

Test ID	Test Case Title	Test Condition	System Behavior	Expected Result
T01	Enter name,roll no, class,DOB	marks should not exceed 100	data is stored	data should be stored in database
T02	student enter name and DOB	scan	marksheet should be diplayed	marksheet diplayed

#### 7.2 Sample of a Test Case

**Title:** Login Page – Authenticate Successfully done by the system

**Description:** A registered user should be able to successfully login at students end.

*Precondition:* the user must already be registered with an roll no address and DOB.

*Assumption:* a supported browser is being used.

#### Test Steps:

1. Navigate to students end.
2. In the 'roll no' field, enter the roll no of the registered user.
3. Click the 'Submit' button.
4. Enter the password of the registered user

## 5. Click 'Submit'

Sign In

**Expected Result:** A page displaying the marksheet of user should load, showing the entries of the marks of user.

**Actual Result:**

Result of the student will be displayed on the screen after he enters his registered credentials.

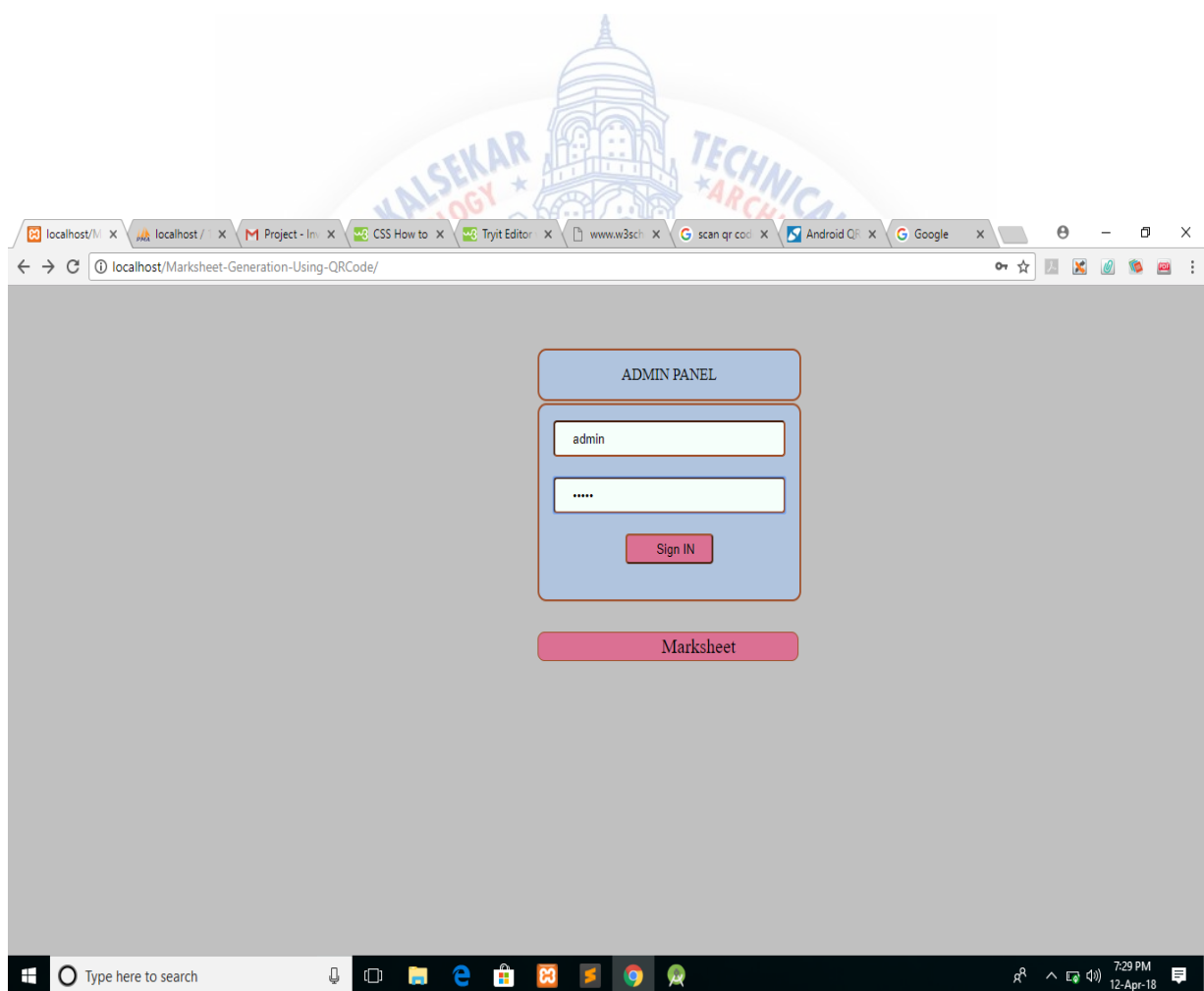
### 7.2.1 Software Quality Attributes

Specify any additional quality characteristics for the product that will be important to either the customers or the developers. Some to consider are: adaptability, availability, correctness, flexibility, interoperability, maintainability, portability, reliability, reusability, robustness, testability, and usability. Write these to be specific, quantitative, and verifiable when possible. At the least, clarify the relative preferences for various attributes, such as ease of use over ease of learning.

# Chapter 8

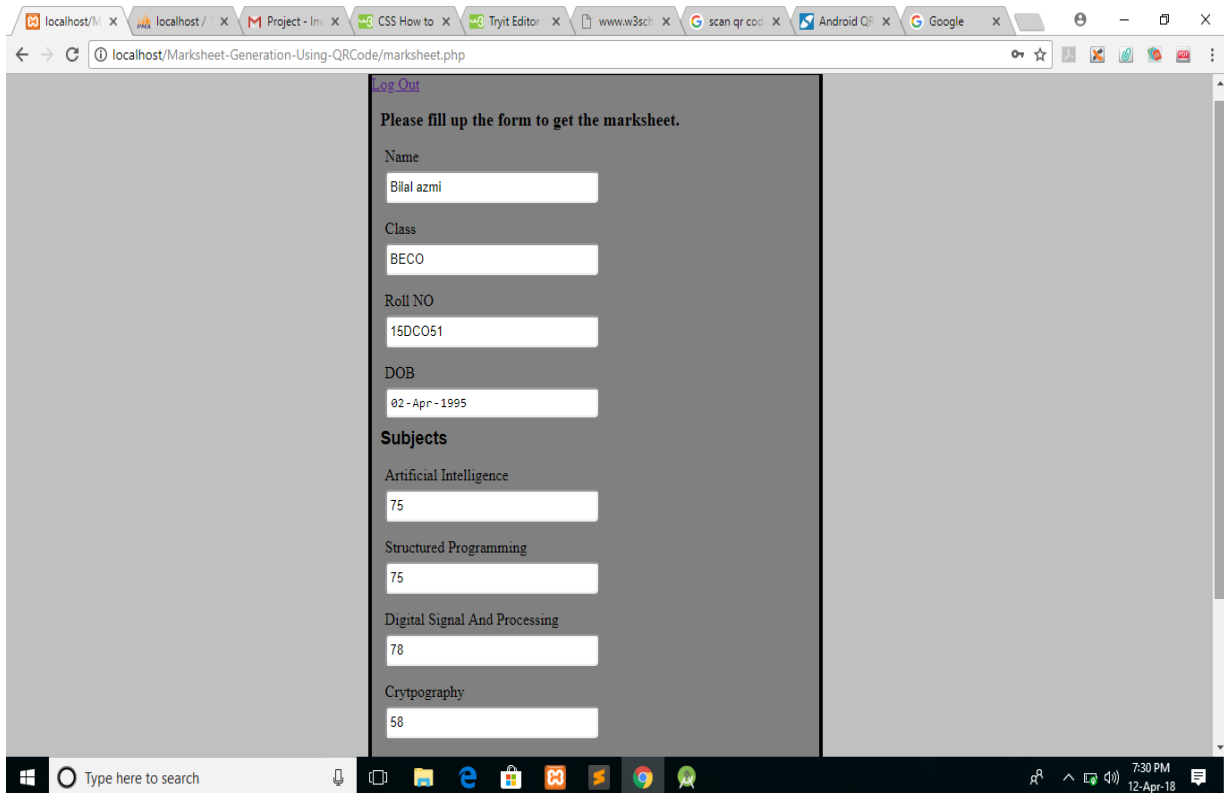
## Screenshots of Project

### 8.1 Admin Login





## 8.1.1 Marks Entry



localhost/M x localhost / x Project - Im x CSS How to x Tnyit Editor x www.w3sch x scan qr cod x Android QF x Google x

localhost/Marksheet-Generation-Using-QRCode/marksheet.php

[Log Out](#)

**Please fill up the form to get the marksheet.**

Name

Class

Roll NO

DOB

**Subjects**

Artificial Intelligence

Structured Programming

Digital Signal And Processing

Cryptography

Type here to search

7:30 PM  
12-Apr-18



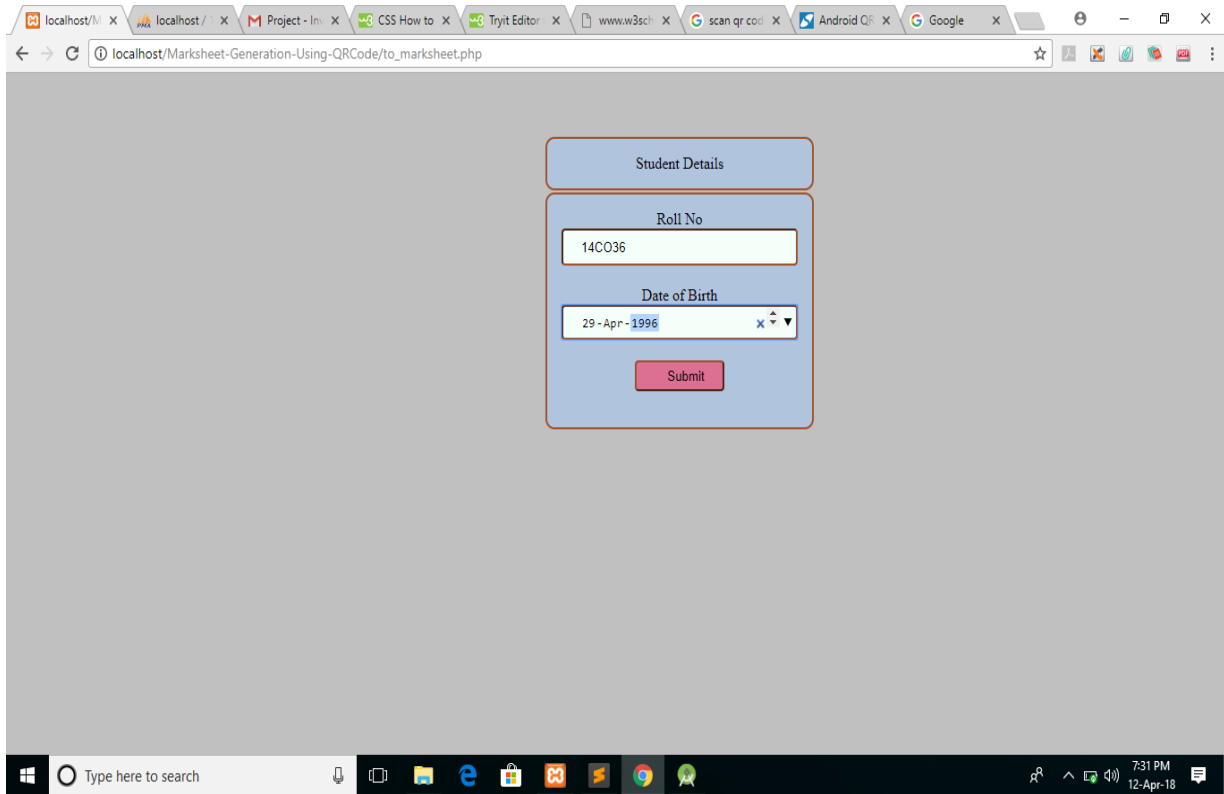
## 8.1.2 Database Entry

The screenshot displays the phpMyAdmin interface for a database named 'student\_mis'. The current view is the 'Table: student\_record' page. The interface shows a table with 6 rows of data. The columns are: id, Rollno, Name, Class, DOB, subject1, subject2, and subject3. The data rows are as follows:

id	Rollno	Name	Class	DOB	subject1	subject2	subject3
27	14CO36	Mustafa Khan	BECO	1996-04-29	V3diaHpwK2pkWUJOU05QNDJqdnF3UT09	SDVhTjArOUxNSWdDY2xSvWpPT1lvz09	VIZyRVgzV2
28	14co44	sayyed mehfooz ali	BECO	1995-11-11	V3diaHpwK2pkWUJOU05QNDJqdnF3UT09	b3VYalHwVUEdqMkipSzBXZU1pZi9TUT09	VIZyRVgzV2
29	14CO49	SHANAWAZ	BECO	1996-11-09	Zk9yalcvZ2xxbHNqaXU4ek5mQXFUT09	Zk9yalcvZ2xxbHNqaXU4ek5mQXFUT09	aVVTdEYzU
30	15dco72	saad	BECO	1994-08-16	MEc1QW9UNXB2YUM2c0d2V2RPdXNFdz09	bHNHLytmNjNHYYJU2aUJPTJJDnzhYQ09	ZUNTb0pMe
31	14DC057	abrar	BECO	1996-04-29	MEc1QW9UNXB2YUM2c0d2V2RPdXNFdz09	MEc1QW9UNXB2YUM2c0d2V2RPdXNFdz09	MEc1QW9U
37	15DC051	Bilal azmi	BECO	1995-04-02	V3diaHpwK2pkWUJOU05QNDJqdnF3UT09	V3diaHpwK2pkWUJOU05QNDJqdnF3UT09	SDVhTjArOU

The interface also shows a search bar, a 'Number of rows' dropdown set to 25, and a 'Filter rows' search box. The 'Query results operations' section at the bottom includes options for 'Check all', 'With selected', 'Edit', 'Copy', 'Delete', and 'Export'.

### 8.1.3 Student End



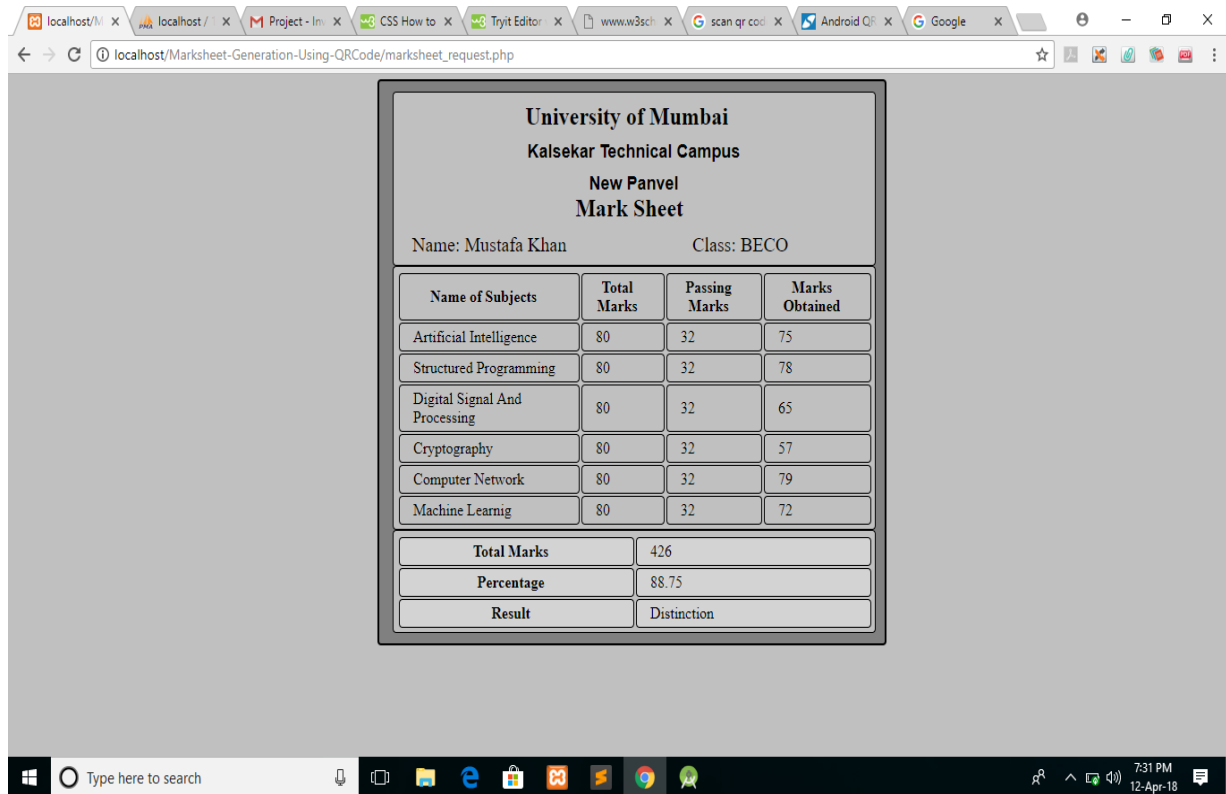
The screenshot shows a web browser window with the URL `localhost/Marksheet-Generation-Using-QRCode/to_marksheet.php`. The browser's address bar and tabs are visible at the top. The main content area displays a form titled "Student Details" with a light blue background. The form contains the following fields:

- Roll No**: A text input field containing the value "14CO36".
- Date of Birth**: A date picker field showing "29 - Apr - 1996".
- Submit**: A red button located at the bottom of the form.

The Windows taskbar is visible at the bottom of the screenshot, showing the search bar and various application icons. The system clock indicates the time is 7:31 PM on 12-Apr-18.



## 8.1.4 Marksheet



University of Mumbai  
Kalsekar Technical Campus  
New Panvel  
Mark Sheet

Name: Mustafa Khan      Class: BECO

Name of Subjects	Total Marks	Passing Marks	Marks Obtained
Artificial Intelligence	80	32	75
Structured Programming	80	32	78
Digital Signal And Processing	80	32	65
Cryptography	80	32	57
Computer Network	80	32	79
Machine Learnig	80	32	72
<b>Total Marks</b>	426		
<b>Percentage</b>	88.75		
<b>Result</b>	Distinction		

Windows taskbar: Type here to search, 7:31 PM, 12-Apr-18



### 8.1.5 QR Code



## Chapter 9

# Conclusion and Future Scope

### 9.1 Conclusion

We have selected this topic because Marksheet is a sensitive document and to preventing it from getting misused by the unauthorized user. As distribution of the Marksheets takes too much time and maintaining these mark sheets is also a big deal so to overcome all these problems this system is propose

### 9.2 Future Scope

- Android and IOS application will be made for the same purpose.
- We will try implement this system at university level.
- Marks, Seat number, Name will be entered over the voice.

## References

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- [2] QR Code Based Digitized Marksheet System IJRCSIT.com (26 February 2014).
- [3] Secure QR Coding of Images Using the Techniques of Encoding and Encryption. IJAER. (12 November 2014).
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- [5] SomdipDey,"New Generation of Digital Academic- Transcript-susing encrypted QR CodeTM "IEEE 2013 International MultiConference on Automation, Computing, Control, Communicationand Compressed Sensing (iMac4s 2013), Kerala, India, March 2013.
- [6] A. SankaraNarayanan,QR Codes and SecuritySolutions,International Journal of Computer Science andTelecommunications [Volume 3, Issue 7, July 2012] IJISRT17OC19 www.ijisrt.com

## Achievements

### 1. Publications

- (a) *Digital Marksheet Generator by Using QR Code*  
IJISRT, Volume 2, Issue 10, October–2017

### 2. Conferences

- (a) *Digital Marksheet Generator by Using QR Code*  
CRTCE-23/02/2018 ,(Kandivali)

### 3. Project Competitions

- (a) *Digital Marksheet Generator by Using QR Code*  
Tantragyan-2018 , March 27,2018 (Koparkhairne)







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